

In the Claims:

1. (Currently amended) A method of writing at least a servo track in recording tracks of a disk file apparatus comprising at least one disk medium rotated by a spindle motor, a head for writing and reading the data on and from said disk medium, and at least a head moving mechanism, said disk medium having a recording surface formed with concentric recording tracks segmented into a plurality of sectors each having written therein the positioning information for said head in advance, said method comprising the steps of:

detecting continuous vibration of the medium, said continuous vibration being asynchronous with the rotational frequency of said spindle motor;

detecting the phase of the detected asynchronous continuous vibration;

determining the write start sector or the write end sector or the write start time or the write end time of each servo track based only on said detected phase of the asynchronous continuous vibration; and

moving said head by said head moving mechanism on said recording surface where said head positioning information is to be written and writing said information based on said write start sector or said write end sector.

2. (Original) A method of writing a servo track for a disk file apparatus according to claim 1, further comprising the steps of:

detecting the rotational frequency of said spindle motor;

writing the head positioning information for a predetermined number of tracks in advance on said disk medium by the conventional servo track write method;

detecting the phase of the head position signal output by reading, using the same head, said predetermined number of the tracks having written therein said head positioning information; and

measuring the phase difference between the phase of said head position signal output and the phase of said asynchronous continuous vibration;

wherein said step of determining the write start sector or the write end sector includes the substep of setting a servo track write start position $[(1 - f_c/f_r) \times 180]^\circ$ behind the phase of the peak amplitude of said asynchronous continuous vibration in the case where $f_c < f_r$, and a servo track write start position $[(f_c/f_r - 1) \times 180]^\circ$ ahead of the phase of the peak amplitude of said asynchronous continuous vibration in the case where $f_c > f_r$, where f_c is the frequency of said asynchronous continuous vibration and f_r is the rotational frequency of said spindle motor.

3. (Original) A method of writing a servo track for a disk file apparatus according to claim 1, further comprising the steps of:

detecting the rotational frequency of said spindle motor;

writing the head positioning information for a predetermined number of tracks in advance on said disk medium by the conventional servo track write method; and

reading, using the same head, said predetermined number of the tracks having written therein said head positioning information;

wherein said step of detecting the continuous vibration asynchronous with the rotational frequency of said spindle motor includes the substep of detecting the phase of said head position signal thereby to detect said asynchronous continuous vibration;

wherein said step of determining the write start sector or the write end sector includes the substep of determining the write start sector or the write end sector includes the substep of setting a servo track write start position $[(1 - f_c/f_r) \times 180]^\circ$ behind the phase of the peak amplitude of said asynchronous continuous vibration in the case where $f_c < f_r$, and a servo track write start position $[(f_c/f_r - 1) \times 180]^\circ$ ahead of the phase of the peak amplitude of said asynchronous continuous vibration in the case where $f_c > f_r$, where f_c is the frequency of said asynchronous continuous vibration and f_r is the rotational frequency of said spindle motor; and

wherein said step of writing said information in said servo track includes the substeps of forming a schedule for writing information in plural ones of all the recording tracks and writing the head positioning information in said plural servo tracks in accordance with said schedule.

4. (Original) A method of writing a servo track for a disk file apparatus according to claim 3, further comprising the steps of:

detecting the phase difference between the phase detected in said step of detecting the phase of said head position signal output and the phase detected at the time of forming the preceding schedule; and

repeating the steps including and subsequent to said step of writing the head positioning information for a predetermined number of tracks in advance in said disk medium by the conventional servo track write method in the case where said phase difference exceeds a predetermined value.

5. (Original) A method of writing a servo track for a disk file apparatus according to claim 1, further comprising the steps of:

detecting the rotational frequency of said spindle motor; and

moving a reference head finely after writing therein said clock signal at the outermost peripheral portion; wherein said step of detecting the w continuous vibration asynchronous with the rotational frequency of said spindle motor includes the substeps of observing the modulation of said clock signal detected from said reference head and detecting the phase of said asynchronous continuous vibration from said observed modulation;

wherein said step of determining the write start sector or the write end sector includes the substep of determining the write start sector or the write end sector includes the substep of setting a servo track write start position $[(1 - f_c/f_r) \times 180]^\circ$ behind the phase of the peak amplitude of said asynchronous continuous vibration in the case where $f_c < f_r$, and a

servo track write start position $[(f_c/f_r - 1) \times 180]^\circ$ ahead of the phase of the peak amplitude of said asynchronous continuous vibration in the case where $f_c > f_r$, where f_c is the frequency of said asynchronous continuous vibration and f_r is the rotational frequency of said spindle motor; and

wherein said step of writing said information includes the substeps of forming a schedule for writing information in plural ones of all the recording tracks and writing the head positioning information in accordance with said schedule.

① 6. (Original) A method of writing a servo track for a disk file apparatus according to claim 1, further comprising the steps of:

detecting the rotational frequency of said spindle motor;

writing the head positioning information for at least one track by a third head other than said head and said head for writing said reference signal, at a place other than the zone of said disk medium for carrying out the servo track write operation and the zone where said reference signal is written; and

reading said track having written therein said head positioning information, by means of said third head;

wherein said step of determining the asynchronous continuous vibration of the rotational frequency of said spindle motor includes the substep of detecting said asynchronous continuous vibration by detecting the phase of the head position signal read by said third head; and

wherein said step of determining the write start sector or the write end sector includes the substep of setting a servo track write start position $[(1 - f_c/f_r) \times 180]^\circ$ behind the phase of the peak amplitude of said asynchronous continuous vibration in the case where $f_c < f_r$, and a servo track write start position $[(f_c/f_r - 1) \times 180]^\circ$ ahead of the phase of the peak amplitude of said asynchronous continuous vibration in the case where $f_c > f_r$, where f_c is the frequency of said asynchronous continuous vibration and f_r is the rotational frequency of said spindle motor.

7. (Canceled)

8. (Previously added) A method of writing a servo track for a disk file apparatus according to claim 1, wherein said continuous asynchronous vibration is detected with a displacement gauge.
